Annals of the City of Alexandria Herbarium: Ancient Outliers of the Fall Line Flora

By Rod Simmons, February 2011

[A regular series featuring field botany updates, notable collections, and scientific contributions largely from the City of Alexandria, Arlington County, and Fairfax County, Virginia, but occasionally including other locales in the Washington, D.C. area as well]

Clinton's Wood Fern (*Dryopteris clintoniana*) (D.C. Eaton) Dowell:

In an attempt to verify the historical status in northern Virginia and southern range extension of *Dryopteris clintoniana*, pteridologists extraordinaire, Carl Taylor and Jim Montgomery, met with Rod Simmons at US – D.C. and Vicinity Collection in June 2010 to examine the sole specimens of *Dryopteris clintoniana* collected from the greater Washington, D.C. region. Because D.C. and vicinity populations of *Dryopteris clintoniana* are disjunct from its primary range in the northeastern U.S., some discrepancy remained as to the identification and status of the local specimens (Virginia Botanical Associates 2011, Shetler and Orli 2000). Moreover, *D. clintoniana* is an allohexaploid from *Dryopteris cristata* and *Dryopteris goldiana* and hybridizes with six species (Montgomery and Wagner 1993).

Spanning nearly 100 years of collecting, only four stations for *D. clintoniana* are represented in the collection. The oldest and most numerous collections are by William Palmer from the late 1800s in the Lincolnia area in the City of Alexandria, Virginia. This station also produced two natural *clintoniana* hybrids.

A total of eleven specimens are represented from the City of Alexandria: six of *Dryopteris clintoniana* and five natural hybrids between *clintoniana* and *D. cristata* and *D. marginalis*. All were collected from woodland seepage habitat - probably not from a Magnolia Bog but springheads and seepage braids along lower slopes of forested ravines - at the western edge of the City:

Dryopteris clintoniana (D.C. Eat.) Dowell Clinton's Wood Fern
(*W. Palmer* [two specimens *s.n.*; and *311a,311e,311h*] 9 Jul 1899, "Lincolnia, cold spring bog, well shaded"; *W. Palmer s.n.*, 2 Jun 1902, "Lincolnia, one colony in cold spring bog")

Dryopteris clintoniana x *D. cristata*
(*W. Palmer s.n.*, 9 Jul 1899, "Lincolnia, cold spring bog, well shaded")

Dryopteris clintoniana x *D. marginalis*
(*W. Palmer* [one specimen *s.n.*; and *311c,311f,311i*] 9 Jul 1899, "Lincolnia, cold spring bog, well shaded")

Unfortunately, much of this once-remote area was destroyed long ago with extensive sand and gravel mining, the construction of Shirley Highway (I-95), and widespread housing development. Some natural areas with woodland seeps do remain, but *D. clintoniana* is considered extirpated from the City of Alexandria. (See http://alexandriava.gov/recreation/info/default.aspx?id=22560 for more information on the historical occurrence of this taxon in the City of Alexandria, Alexandria geology and soils, and keys to various notations on referenced historical collections in Alexandria.)

Fig. 1. Jim Montgomery and Carl Taylor identifying ferns at US – D.C. and Vicinity Collection. Photo by R.H. Simmons.

Two specimens from distinct stations in Fairfax County are also represented in the D.C. and Vicinity Collection, one from the Burke area in the southern part of the county and one from the western section of the county in Reston:

Dryopteris clintoniana (D.C. Eat.) Dowell
(*H.G. Deignan 1094*, 22 Jun 1946, "Fairfax, 5.5 m. from Fairfax Courthouse; originally growing in rich woods on right bank of Cherry Run [ca. 6.25 m. from Fairfax Courthouse], but transplanted in summer of 1942 or 1943 to Deignan's land near cabin. This frond suffered injury from a fallen branch and fruited abnormally early")

Dryopteris clintoniana (D.C. Eat.) Dowell
(*Bruce Aitken s.n.*, 10 Jun 1980, "Reston: in weedy open clearing with *Lonicera japonica*, *Rubus*, *Parthenocissus quinquefolia*, *Dryopteris spinulosa*, and Poison Ivy")

The collection from a weedy, meadowy glade in Reston is the most recent and raises the potential of this taxon's persistence in Fairfax County. (Similar habitats also occur in nearby Prince William County and Stafford County.) The above specimens represent the first reporting of *Dryopteris clintoniana* in Virginia, including the two natural hybrids.

No specimens were noted from Washington, D.C., but four specimens were collected by William Palmer in 1899 from one station at Glen Echo in Montgomery County, Maryland:

Dryopteris clintoniana (D.C. Eat.) Dowell
(*W. Palmer s.n.* [two specimens], 20 Jul 1899, "Glen Echo, cold spring bog, well shaded"; *W. Palmer 322, 322a*, 20 Jul 1899, "Glen Echo, cold spring bog in deep shade")

D. clintoniana was confirmed several years ago for Maryland from a location on the Eastern Shore (Chris Frye and Wes Knapp pers. comm.) by Jim Montgomery, with the Glen Echo occurrence adding an interior station to the known distribution within the state. (Maryland botanist Clyde Reed extensively collected throughout Maryland and documented *D. clintoniana* from several stations within the state. However, the Reed Herbarium was dismantled after his death and the locations of those collections may only remain in his fern guide, *The Ferns and Fern-Allies of Maryland and Delaware Including District of Columbia*.)

Fig. 2. *Dryopteris clintoniana* x *D. marginalis.* Photo by R.H. Simmons.

Evergreen Wood Fern (*Dryopteris intermedia*) (Muhl. *ex* Willd.) Gray:

Long considered extirpated in the City of Alexandria and well over a hundred years since its last collection in the City, Evergreen Wood Fern (*Dryopteris intermedia*) was rediscovered in virtually its original station and habitat at Rynex Nature Area in the Lincolnia area at the western edge of the City. A single specimen was noted in late winter 2010 by Rod Simmons, with Jennifer Millwood, Jane Yeingst and Mary Alexander of the Ford Nature Center, growing on the (now-steep) upper bank of the spring-fed seepage tributary that runs through Rynex.

Lincolnia, as well as other sandy-gravelly locales in Franconia/Springfield, South Arlington, and D.C., contains numerous springs, woodland seeps, spring-fed seepage stream valleys (Fig. 3), and historically Magnolia Bogs (Fig. 4) - all of which emanate from the abundant aquifers arising from vast deposits of porous sands and gravels of the Potomac Formation. A comparison of today's location and habitat with William Palmer's 1899 collections below illustrates the tenacity of many plant species and the importance of habitat preservation:

Dryopteris intermedia (Muhl. *ex* Willd.) Gray
(*W. Palmer 211a*, 30 Apr 1899, "Lincolnia, streambank in partly open ravine"; *W. Palmer 312*, 9 Jul 1899, "Lincolnia, rather open ravine")

Fig. 3. Spring-fed seepage braids with associated wetland flora and main tributary of lower forested ravine at Rynex Nature Area. Photo by R.H. Simmons.

D. intermedia is often confused with the tetraploid *Dryopteris carthusiana* (Villars) H.P. Fuchs (syn. *D. spinulosa*), though it can be distinguished from *carthusiana* by having the basal pinnules of lowest pinnae "shorter than adjacent pinnules"; having mostly evergreen fronds vs. semi-evergreen in *carthusiana*; and having the upper frond, rachis, and indusia finely glandular vs. non-glandular in *carthusiana* (Montgomery and Wagner 1993).

Fig. 4. The aptly-named "Fern Belt" at the northeastern edge of the former Winkler Botanical Preserve - also in the Lincolnia area - as it appeared in the early 1990s. This pristine wetlands was regionally famous as one of the best remaining examples of the globally-rare Fall Line Magnolia Bog community (*Nyssa sylvatica - Magnolia virginiana - (Pinus rigida) / Rhododendron viscosum - Toxicodendron vernix / Smilax pseudochina Woodland*; USNVC - CEGL006219). This was also Alexandria's last remaining Magnolia Bog, which was sadly destroyed in the mid-1990s during massive development at Mark Center that continues today with the Washington Headquarters Services (WHS) building construction. Photo by R.H. Simmons.

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